Malthusianism

Malthusianism is the idea that population growth is potentially exponential while the growth of the food supply or other resources is linear, which eventually reduces living standards to the point of triggering a population die off. This event, called a **Malthusian catastrophe** (also known as a **Malthusian trap**, **population trap**, **Malthusian check**, **Malthusian crisis**, **Malthusian spectre**, or **Malthusian crunch**) occurs when population growth outpaces agricultural production, causing famine or war, resulting in poverty and depopulation. Such a catastrophe inevitably has the effect of forcing the population (quite rapidly, due to the potential severity and unpredictable results of the mitigating factors involved, as compared to the relatively slow time scales and well-understood processes governing unchecked growth or growth affected by preventive checks) to "correct" back to a lower, more easily sustainable level.[1][2] Malthusianism has been linked to a variety of political and social movements, but almost always refers to advocates of population control.[3]

Thomas Robert Malthus, after whom Malthusianism is named

These concepts derive from the political and economic thought of the Reverend Thomas Robert Malthus, as laid out in his 1798 writings, *An Essay on the Principle of Population*. Malthus suggested that while technological advances could increase a society's supply of resources, such as food, and thereby improve the standard of living, the resource abundance would enable population growth, which would eventually bring the per capita supply of resources back to its original level. Some economists contend that since the industrial revolution, mankind has broken out of the trap.[4][5] Others argue that the continuation of extreme poverty indicates that the Malthusian trap continues to operate.[6] Others further argue that due to lack of food availability coupled with excessive pollution, developing countries show more evidence of the trap.[7] A similar, more modern concept, is that of human overpopulation.

Neo-Malthusianism is the advocacy of human population planning to ensure resources and environmental integrities for current and future human populations as well as for other species.[2] In Britain the term 'Malthusian' can also refer more specifically to arguments made in favour of preventive birth control, hence organizations such as the Malthusian League.[8] Neo-Malthusians differ from Malthus's theories mainly in their support for the use of contraception. Malthus, a devout Christian, believed that "self-control" (i.e., abstinence) was preferable to artificial birth control. He also worried that the effect of contraceptive use would be too powerful in curbing growth, conflicting with the common 18th century perspective (to which Malthus himself adhered) that a steadily growing population remained a necessary factor in the continuing "progress of society," generally. Modern neo-Malthusians are generally more concerned than Malthus with environmental degradation and catastrophic famine than with poverty.

Malthusianism has attracted criticism from diverse schools of thought, including Marxists[9] and socialists,[10] libertarians and free market enthusiasts,[11] feminists[12] and human rights advocates, characterising it as excessively pessimistic, misanthropic or inhuman.[13][14][3][15] Many critics believe Malthusianism has been discredited since the publication of *Principle of Population*, often citing advances in agricultural techniques and modern reductions in human fertility.[16] Many modern proponents believe that the basic concept of population growth eventually outstripping resources is still fundamentally valid, and that positive checks are

still likely to occur in humanity's future if no action is taken to intentionally curb population growth.[17][18] In spite of the variety of criticisms against it, the Malthusian argument remains a major discourse based on which national and international environmental regulations are promoted.

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Malthus' theoretical argument

In 1798, Thomas Malthus proposed his theory in *An Essay on the Principle of Population*.

He argued that society has a natural propensity to increase its population, a propensity that causes population growth to be the best measure of the happiness of a people: "The happiness of a country does not depend, absolutely, upon its poverty, or its riches, upon its youth, or its age, upon its being thinly, or fully inhabited, but upon the rapidity with which it is increasing, upon the degree in which the yearly increase of food approaches to the yearly increase of an unrestricted population."[19]

However, the propensity for population increase also leads to a natural cycle of abundance and shortages:

> We will suppose the means of subsistence in any country just equal to the easy support of its inhabitants. The constant effort towards population...increases the number of people before the means of subsistence are increased. The food therefore which before supported seven millions, must now be divided among seven millions and a half or eight millions. The poor consequently must live much worse, and many of them be reduced to severe distress. The number of labourers also being above the proportion of the work in the market, the price of labour must tend toward a decrease; while the price of provisions would at the same time tend to rise. The labourer therefore must work harder to earn the same as he did before. During this season of distress, the discouragements to marriage, and the difficulty of rearing a family are so great, that population is at a stand. In the mean time the cheapness of labour, the plenty of labourers, and the necessity of an increased industry amongst them, encourage cultivators to employ more labour upon their land; to turn up fresh soil, and to manure and improve more completely what is already in tillage; till

> ultimately the means of subsistence become in the same proportion to the population as at the period from which we set out. The situation of the labourer being then again tolerably comfortable, the restraints to population are in some degree loosened; and the same retrograde and progressive movements with respect to happiness are repeated.
>
> — Thomas Malthus, 1798. *An Essay on the Principle of Population*, Chapter II.

> Famine seems to be the last, the most dreadful resource of nature. The power of population is so superior to the power of the earth to produce subsistence for man, that premature death must in some shape or other visit the human race. The vices of mankind are active and able ministers of depopulation. They are the precursors in the great army of destruction, and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague advance in terrific array, and sweep off their thousands and tens of thousands. Should success be still incomplete, gigantic inevitable famine stalks in the rear, and with one mighty blow levels the population with the food of the world.
>
> — Thomas Malthus, 1798. *An Essay on the Principle of Population*. Chapter VII, p. 61[20]

Malthus faced opposition from economists both during his life and since. A vocal critic several decades later was Friedrich Engels.[21][22]

Early history

Malthus was not the first to outline the problems he perceived. The original essay was part of an ongoing intellectual discussion at the end of the 18th century regarding the origins of poverty. *Principle of Population* was specifically written as a rebuttal to thinkers like William Godwin and the Marquis de Condorcet, and Malthus's own father who believed in the perfectibility of humanity. Malthus believed humanity's ability to reproduce too rapidly doomed efforts at perfection and caused various other problems.

His criticism of the working class's tendency to reproduce rapidly, and his belief that this, rather than exploitation by capitalists, led to their poverty, brought widespread criticism of his theory.[23]

Malthusians perceived ideas of charity to the poor, typified by Tory paternalism, were futile, as these would only result in increased numbers of the poor; these theories played into Whig economic ideas exemplified by the Poor Law Amendment Act of 1834. The Act was described by opponents as "a Malthusian bill designed to force the poor to emigrate, to work for lower wages, to live on a coarser sort of food",[24] which initiated the construction of workhouses despite riots and arson.

Malthus revised his theories in later editions of *An Essay on the Principles of Population*, taking a more optimistic tone, although there is some scholarly debate on the extent of his revisions.[1] According to Dan Ritschel of the Center for History Education at the University of Maryland, Baltimore County,

> The great Malthusian dread was that "indiscriminate charity" would lead to exponential growth in the population in poverty, increased charges to the public purse to support this growing army of the dependent, and, eventually, the catastrophe of national bankruptcy. Though Malthusianism has since come to be identified with the issue of general over-population, the original Malthusian concern was more specifically with the fear of over-population by the dependent poor.[25]

One of the earliest critics was David Ricardo. Malthus immediately and correctly recognised it to be an attack on his theory of wages. Ricardo and Malthus debated this in a lengthy personal correspondence.[26]

Another one of the 19th century critics of Malthusian theory was Karl Marx who referred to it as "nothing more than a schoolboyish, superficial plagiary of De Foe, Sir James Steuart, Townsend, Franklin, Wallace" (in *Capital*, see Marx's footnote on Malthus from *Capital* – reference below). Marx and Engels described Malthus as a "lackey of the bourgeoisie".[23] Socialists and communists believed that Malthusian theories "blamed the poor" for their own exploitation by the capitalist classes, and could be used to suppress the proletariat to an even greater degree, whether through attempts to reduce fertility or by justifying the generally poor conditions of labour in the 19th century.

One proponent of Malthusianism was the novelist Harriet Martineau whose circle of acquaintances included Charles Darwin, and the ideas of Malthus were a significant influence on the inception of Darwin's theory of evolution.[27] Darwin was impressed by the idea that population growth would eventually lead to more organisms than could possibly survive in any given environment, leading him to theorize that organisms with a relative advantage in the struggle for survival and reproduction would be able to pass their characteristics on to further generations. Proponents of Malthusianism were in turn influenced by Darwin's ideas, both schools coming to influence the field of eugenics. Henry Fairfield Osborn Jr. advocated "humane birth selection through humane birth control" in order to avoid a Malthusian catastrophe by eliminating the "unfit".[1]

Malthusianism became a less common intellectual tradition as the 19th century advanced, mostly as a result of technological increases, the opening of new territory to agriculture, and increasing international trade.[1] Although a "conservationist" movement in the United States concerned itself with resource depletion and natural protection in the first half of the twentieth century, Desrochers and Hoffbauer write, "It is probably fair to say ... that it was not until the publication of Osborn's and Vogt's books [1948] that a Malthusian revival took hold of a significant segment of the American population".[1]

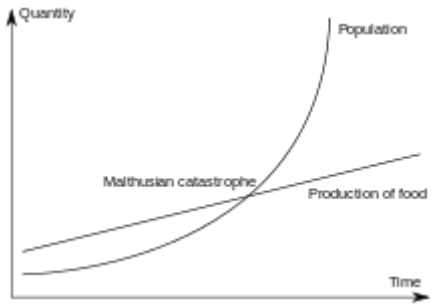
Modern formulation

The modern formulation of the Malthusian theory was developed by Qumarul Ashraf and Oded Galor.[28] Their theoretical structure suggests that as long as: (i) higher income has a positive effect on reproductive success, and (ii) land is limited factor of production, then technological progress has only a temporary effect in income per capita. While in the short-run technological progress increases income per capita, resource abundance created by technological progress would enable population growth, and would eventually bring the per capita income back to its original long-run level.

The testable prediction of the theory is that during the Malthusian epoch technologically advanced economies were characterized by higher population density, but their level of income per capita was not different than the level in societies that are technologically backward.

Preventive vs. positive population controls

Malthus proposed two types of "checks" that limit population growth based on food supply at any given time:



The Malthusian catastrophe simplistically illustrated

- A *preventive check* is a conscious decision to delay marriage or abstain from procreation based on a lack of resources.[29] These include moral restraints or legislative action — for example the choice by a private citizen to engage in abstinence and delay marriage until their finances become balanced, or restriction of legal marriage or parenting rights for persons deemed "deficient" or "unfit" by the government. Malthus argued that people are incapable of ignoring the consequences of uncontrolled population growth, and would intentionally avoid contributing to it.[29]
- A *positive check* is any event or circumstance that shortens the human life span. The primary examples of this are war, plague and famine.[29] However, poor health and economic conditions are also considered instances of positive checks.[30] When these lead to high rates of premature death, the result is termed a Malthusian catastrophe. The adjacent diagram depicts the abstract point at which such an event would occur, in terms of existing population and food supply: when the population reaches or exceeds the capacity of the shared supply, positive checks are forced to occur, restoring balance. (In reality the situation would be significantly more nuanced due to complex regional and individual disparities around access to food, water, and other resources.)

Neo-Malthusian theory

Malthusian theory is a recurrent theme in many social science venues. John Maynard Keynes, in *Economic Consequences of the Peace*, opens his polemic with a Malthusian portrayal of the political economy of Europe as unstable due to Malthusian population pressure on food supplies.[31] Many models of resource depletion and scarcity are Malthusian in character: the rate of energy consumption will outstrip the ability to find and produce new energy sources, and so lead to a crisis.

In France, terms such as "*politique malthusienne*" ("Malthusian politics") refer to population control strategies. The concept of restriction of the population associated with Malthus morphed, in later political-economic theory, into the notion of restriction of production. In the French sense, a "Malthusian economy" is one in which protectionism and the formation of cartels is not only tolerated but encouraged.

Vladimir Lenin, the leader of the Bolshevik Party and the main architect of the Soviet Union was a critic of Neo-Malthusian theory (but not of birth control and abortion in general).[32]

"Neo-Malthusianism" is a concern that overpopulation as well as overconsumption may increase resource depletion and/or environmental degradation will lead to ecological collapse or other hazards.

The rapid increase in the global population of the past century exemplifies Malthus's predicted population patterns; it also appears to describe socio-demographic dynamics of complex pre-industrial societies. These findings are the basis for neo-Malthusian modern mathematical models of *long-term historical dynamics*.[33]

There was a general "neo-Malthusian" revival in the mid-to-late 1940s, continuing through to the 2010s after the publication of two influential books in 1948 (Fairfield Osborn's *Our Plundered Planet* and William Vogt's *Road to Survival*). During that time the population of the world rose dramatically. Many in environmental movements began to sound the alarm regarding the potential dangers of population growth.[1] In 1968, ecologist Garrett Hardin published an influential essay in *Science* that drew heavily from Malthusian theory. His essay, "The Tragedy of the Commons," argued that "a finite world can support only a finite population" and that "freedom to breed will bring ruin to all."[34] The Club of Rome published a book entitled *The Limits to Growth* in 1972. The report and the organisation soon became central to the neo-Malthusian revival.[35] Paul R. Ehrlich has been one of the most prominent neo-Malthusians since the publication of *The Population*

Bomb in 1968. Leading ecological economist Herman Daly has acknowledged the influence of Malthus on his concept of a steady-state economy.[36]:xvi Other prominent Malthusians include the Paddock brothers, authors of *Famine 1975! America's Decision: Who Will Survive?*

The neo-Malthusian revival has drawn criticism from writers who claim the Malthusian warnings were overstated or premature because the green revolution has brought substantial increases in food production and will be able to keep up with continued population growth.[16][37] Julian Simon, a cornucopian, has written that contrary to neo-Malthusian theory, Earth's "carrying capacity" is essentially limitless.[1] Simon argues not that there is an infinite physical amount of, say, copper, but for human purposes that amount should be treated as infinite because it is not bounded or limited in any economic sense, because: 1) known reserves are of uncertain quantity 2) New reserves may become available, either through discovery or via the development of new extraction techniques 3) recycling 4) more efficient utilization of existing reserves (e.g., "It takes much less copper now to pass a given message than a hundred years ago." [The Ultimate Resource 2, 1996, footnote, page 62]) 5) development of economic equivalents, e.g., optic fibre in the case of copper for telecommunications. Responding to Simon, Al Bartlett reiterates the potential of population growth as an exponential (or as expressed by Malthus, "geometrical") curve to outstrip both natural resources and human ingenuity.[38] Bartlett writes and lectures particularly on energy supplies, and describes the "inability to understand the exponential function" as the "greatest shortcoming of the human race".

Prominent neo-Malthusians such as Paul Ehrlich maintain that ultimately, population growth on Earth is still too high, and will eventually lead to a serious crisis.[13][39] The 2007–2008 world food price crisis inspired further Malthusian arguments regarding the prospects for global food supply.[40]

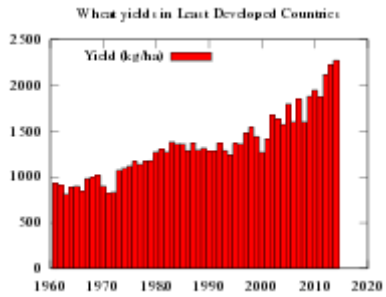
From approximately 2004 to 2011, concerns about "peak oil" and other forms of resource depletion became widespread in the United States, and motivated a large if short-lived subculture of neo-Malthusian "peakists."[41]

A United Nations Food and Agriculture Organization study conducted in 2009[42] said that food production would have to increase by 70% over the next 40 years, and food production in the developing world would need to double[43] to feed a projected population increase from 7.8 billion to 9.1 billion in 2050. The effects of global warming (floods, droughts, and other extreme weather events) are expected to negatively affect food production, with different impacts in different regions.[44][45] The FAO also said the use of agricultural resources for biofuels may also put downward pressure on food availability.[46]

Evidence in support

Research indicates that technological superiority and higher land productivity had significant positive effects on population density but insignificant effects on the standard of living during the time period 1–1500 AD.[48] In addition, scholars have reported on the lack of a significant trend of wages in various places over the world for very long stretches of time.[5][49] In Babylonia during the period 1800 to 1600 BC, for example, the daily wage for a common laborer was enough to buy about 15 pounds of wheat. In Classical Athens in about 328 BC, the corresponding wage could buy about 24 pounds of wheat. In England in 1800 AD the wage was about 13 pounds of wheat.[5]:50 In spite of the technological developments across these societies, the daily wage hardly varied. In Britain between 1200 and 1800, only relatively minor fluctuations from the mean (less than a factor of two) in real wages occurred. Following depopulation by the Black Death and other epidemics, real income in Britain peaked around 1450–1500 and began declining until the British Agricultural Revolution.[50] Historian Walter Scheidel posits that waves of plague following the initial outbreak of the Black Death throughout Europe had a leveling effect that changed the ratio of land to labor, reducing the value of the former while boosting that of the latter, which lowered economic inequality by making employers and landowners less well off while improving the economic prospects and living standards of workers. He says that "the observed improvement in living standards of the laboring population was rooted in the suffering and

premature death of tens of millions over the course of several generations." This leveling effect was reversed by a "demographic recovery that resulted in renewed population pressure."[51]



Wheat yields in developing countries since 1961, in kg/ha. The steep rise in crop yields in the U.S. began in the 1940s. The percentage of growth was fastest in the early rapid growth stage. In developing countries maize yields are still rapidly rising.[47]

Robert Fogel published a study of lifespans and nutrition from about a century before Malthus to the 19th century that examined European birth and death records, military and other records of height and weight that found significant stunted height and low body weight indicative of chronic hunger and malnutrition. He also found short lifespans that he attributed to chronic malnourishment which left people susceptible to disease. Lifespans, height and weight began to steadily increase in the UK and France after 1750. Fogel's findings are consistent with estimates of available food supply.[52]

Evidence supporting Malthusianism today can be seen in the poorer countries of the world with booming populations. In East Africa specifically, experts say that this area of the world has not yet escaped the Malthusian effects of population growth.[53] Jared Diamond in his book *Collapse* (2005), for example, argues that the Rwandan Genocide was brought about in part due to excessive population pressures. He argues that Rwanda “illustrates a case where Malthus’s worst-case scenario does seem to have been right.” Due to population pressures in Rwanda, Diamond explains that the population density combined with lagging technological advancements caused its food production to not be able to keep up with its population. Diamond claims that this environment is what caused the mass killings of Tutsi and even some Hutu Rwandans.[54] The genocide, in this instance, provides a potential example of a Malthusian trap.

Theory of breakout via technology

Industrial Revolution

Some researchers contend that a British breakout occurred due to technological improvements and structural change away from agricultural production, while coal, capital, and trade played a minor role.[55] Economic historian Gregory Clark, building on the insights of Galor and Moav,[56] has argued, in his book *A Farewell to Alms*, that a British breakout may have been caused by differences in reproduction rates among the rich and the poor (the rich were more likely to marry, tended to have more children, and, in a society where disease was rampant and childhood mortality at times approached 50%, upper-class children were more likely to survive to adulthood than poor children.) This in turn led to sustained "downward mobility": the descendants of the rich becoming more populous in British society and spreading middle-class values such as hard work and literacy.

20th century

After World War II, mechanized agriculture produced a dramatic increase in productivity of agriculture and the Green Revolution greatly increased crop yields, expanding the world's food supply while lowering food prices. In response, the growth rate of the world's population accelerated rapidly, resulting in predictions by Paul R. Ehrlich, Simon Hopkins,[59] and many others of an imminent Malthusian catastrophe. However, populations of most developed countries grew slowly enough to be outpaced by gains in productivity.

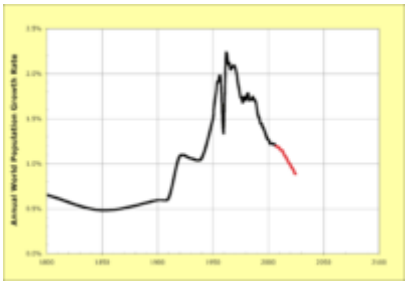
By the early 21st century, many technologically-developed countries had passed through the demographic transition, a complex social development encompassing a drop in total fertility rates in response to various fertility factors, including lower infant mortality, increased urbanization, and a wider availability of effective

birth control.

On the assumption that the demographic transition is now spreading from the developed countries to less developed countries, the United Nations Population Fund estimates that human population may peak in the late 21st century rather than continue to grow until it has exhausted available resources.[60]

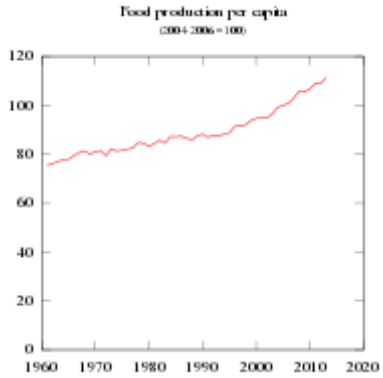
Global deaths in conflicts since the year 1400

A 2004 study by a group of prominent economists and ecologists, including Kenneth Arrow and Paul Ehrlich[61] suggests that the central concerns regarding sustainability have shifted from population growth to the consumption/savings ratio, due to shifts in population growth rates since the 1970s. Empirical estimates show that public policy (taxes or the establishment of more complete property rights) can promote more efficient consumption and investment that are sustainable in an ecological sense; that is, given the current (relatively low) population growth rate, the Malthusian catastrophe can be avoided by either a shift in consumer preferences or public policy that induces a similar shift.


A chart of estimated annual growth rates in world population, 1800–2005. Rates before 1950 are annualized historical estimates from the US Census Bureau.[57] Red = USCB projections to 2025.

Criticism

Karl Marx and Friedrich Engels argued that Malthus failed to recognize a crucial difference between humans and other species. In capitalist societies, as Engels put it, scientific and technological "progress is as unlimited and at least as rapid as that of population".[62] Marx argued, even more broadly, that the growth of both a human population *in toto* and the "relative surplus population" within it, occurred in direct proportion to accumulation.[63]



Growth in food production has historically been greater than the population growth. Food per person increased since 1961. The graph runs up to slightly past 2010.[58]

Henry George in *Progress and Poverty* (1879) criticized Malthus's view that population growth was a cause of poverty, arguing that poverty was caused by the concentration of ownership of land and natural resources. George noted that humans are distinct from other species, because unlike most species humans can use their minds to leverage the reproductive forces of nature to their advantage. He wrote, "Both the jayhawk and the man eat chickens; but the more jayhawks, the fewer chickens, while the more men, the more chickens."[64]

D. E. C. Eversley observed that Malthus appeared unaware of the extent of industrialization, and either ignored or discredited the possibility that it could improve living conditions of the poorer classes.[65]

Barry Commoner believed in *The Closing Circle* (1971) that technological progress will eventually reduce the demographic growth and environmental damage created by civilization. He also opposed coercive measures postulated by neo-malthusian movements of his time arguing that their cost will fall disproportionately on the low-income population who is struggling already.

Ester Boserup suggested that expanding population leads to agricultural intensification and development of more productive and less labor-intensive methods of farming. Thus, human population levels determines agricultural methods, rather than agricultural methods determining population.[66]

Environmentalist Stewart Brand summarized how the Malthusian predictions of *The Population Bomb* and *The Limits to Growth* failed to materialize due to radical changes in fertility:[67]

> The theory's Malthusian premise has been proven wrong since 1963, when the rate of population growth reached a frightening 2 percent a year but then began dropping. The 1963 inflection point showed that the imagined soaring J-curve of human increase was instead a normal S-curve. The growth rate was leveling off. No one thought the growth rate might go negative and the population start shrinking in this century without an overshoot and crash, but that is what is happening.
>
> — Stewart Brand, *Whole Earth Discipline*

Short-term trends, even on the scale of decades or centuries, cannot prove or disprove the existence of mechanisms promoting a Malthusian catastrophe over longer periods. However, due to the prosperity of a major fraction of the human population at the beginning of the 21st century, and the debatability of the predictions for ecological collapse made by Paul R. Ehrlich in the 1960s and 1970s, some people, such as economist Julian L. Simon and medical statistician Hans Rosling questioned its inevitability.[68]

Joseph Tainter asserts that science has diminishing marginal returns[69] and that scientific progress is becoming more difficult, harder to achieve, and more costly, which may reduce efficiency of the factors that prevented the Malthusian scenarios from happening in the past.

The view that a "breakout" from the Malthusian trap has led to an era of sustained economic growth is explored by "unified growth theory".[4][70] One branch of unified growth theory is devoted to the interaction between human evolution and economic development. In particular, Oded Galor and Omer Moav argue that the forces of natural selection during the Malthusian epoch selected beneficial traits to the growth process and this growth enhancing change in the composition of human traits brought about the escape from the Malthusian trap, the demographic transition, and the take-off to modern growth.[71]

See also

- 2007–2008 world food price crisis
- Agricultural Involution
- Antinatalism
- Cliodynamics
- Demographic trap
- Doomer
- Eugenics
- Food Race
- Food security
- Food technology
- Global catastrophic risk
- History of economic thought
- Human overpopulation
- Jevons paradox
- John B. Calhoun
- Law of rent
- List of population concern organizations
- Malthusian growth model

- National Security Study Memorandum 200 - a U.S. National Security Council Study advocating population reduction in selected countries to advance U.S. interests
- Olduvai theory
- Overshoot (population)
- Peak phosphorus
- Peak oil
- Political demography
- Population cycle
- Population ecology
- Productivity-improving technologies
- r/K selection theory
- Social trap
- Spontaneous order
- Subsistence theory of wages
- Survivalism
- "The dismal science"
- Tragedy of the commons
- Unified growth theory
- Walter Scheidel

Notes

1. Pierre Desrochers; Christine Hoffbauer (2009). "The Post War Intellectual Roots of the Population Bomb" (https://web.archive.org/web/20120302185414/http://www.dpi.inpe.br/sil/cst310/Aula2_fundamentos/THE_POST_WAR_INTELLECTUAL_ROOTS_OF_THE_POPULATION_BOMB_-_FAIRFIELD_OSBORNS_OUR_PLUNDERED_PLANET_AND_WILLIAM_VOGTS_ROAD_TO_SURVIVAL_IN_RETROSPECT.pdf) (PDF). *The Electronic Journal of Sustainable Development*. **1** (3). Archived from the original (http://www.dpi.inpe.br/sil/cst310/Aula2_fundamentos/THE_POST_WAR_INTELLECTUAL_ROOTS_OF_THE_POPULATION_BOMB_-_FAIRFIELD_OSBORNS_OUR_PLUNDERED_PLANET_AND_WILLIAM_VOGTS_ROAD_TO_SURVIVAL_IN_RETROSPECT.pdf) (PDF) on March 2, 2012. Retrieved 2010-02-01.
2. Meredith Marsh, Peter S. Alagona, ed. (2008). *Barrons AP Human Geography 2008 Edition* (https://books.google.com/books?id=u374siQOPTgC). Barron's Educational Series. ISBN 978-0-7641-3817-1.
3. Dolan, Brian (2000). *Malthus, Medicine & Morality: Malthusianism after 1798* (https://books.google.com/books?id=2znzI0_nzXcC). Rodopi. ISBN 978-90-420-0851-9.
4. Galor, Oded (2005). "From Stagnation to Growth: Unified Growth Theory" (https://ideas.repec.org/h/eee/grochp/1-04.html). *Handbook of Economic Growth*. **1**. Elsevier. pp. 171–293.
5. Clark, Gregory (2007). *A Farewell to Alms: A Brief Economic History of the World*. Princeton University Press. ISBN 978-0-691-12135-2.
6. Julia Zinkina & Andrey Korotayev. Explosive Population Growth in Tropical Africa: Crucial Omission in Development Forecasts (Emerging Risks and Way Out). *World Futures* 70/2 (2014): 120–39 (https://www.academia.edu/6823642/EXPLOSIVE_POPULATION_GROWTH_IN_TROPICAL_AFRICA_CRUCIAL_OMISSION_IN_DEVELOPMENT_FORECASTS_EMERGING_RISKS_AND_WAY_OUT).
7. Tisdell, Clem (1 January 2015). "The Malthusian Trap and Development in Pre-Industrial Societies: A View Differing from the Standard One" (http://ageconsearch.umn.edu/bitstream/197551/2/WP59.pdf) (PDF). *University of Queensland*. Retrieved 26 February 2017.

8. Hall, Lesley (2000). "Malthusian Mutations: The changing politics and moral meanings of birth control in Britain" (https://books.google.com/books?id=2znzI0_nzXcC&pg=PA141). *Malthus, Medicine, & Morality*. *Clio Medica (Amsterdam, Netherlands)*. **59**. Dolan (2000), *Malthus, Medicine & Morality: Malthusianism after 1798*, p. 141: Rodopi. pp. 141–163. doi:10.1163/9789004333338_008 (https://doi.org/10.1163%2F9789004333338_008). ISBN 978-9042008519. PMID 11027073 (https://pubmed.ncbi.nlm.nih.gov/11027073).
9. See, for example, Ronald L. Meek, ed. (1973). *Marx and Engels on the Population Bomb* (https://web.archive.org/web/20000521124318/http://www.fortunecity.com/victorian/literary/96/population.html). The Ramparts Press. Archived from the original (http://www.fortunecity.com/victorian/literary/96/population.html) on 2000-05-21.
10. Barry Commoner (May 1972). "A Bulletin Dialogue: on "The Closing Circle" – Response" (https://books.google.com/books?id=pwsAAAAAMBAJ&pg=PA17). *Bulletin of the Atomic Scientists*: 17–56.
11. Simon, JL (June 27, 1980). "Resources, Population, Environment: An Oversupply of False Bad News". *Science*. **208** (4451): 1431–37. Bibcode:1980Sci...208.1431S (https://ui.adsabs.harvard.edu/abs/1980Sci...208.1431S). doi:10.1126/science.7384784 (https://doi.org/10.1126%2Fscience.7384784). JSTOR 1684670 (https://www.jstor.org/stable/1684670). PMID 7384784 (https://pubmed.ncbi.nlm.nih.gov/7384784).
12. Knudsen, Lara *Reproductive Rights in a Global Context: South Africa, Uganda, Peru, Denmark, United States, Vietnam, Jordan* (https://archive.org/details/reproductiverigh0000knud), Vanderbilt University Press, 2006, pp. 2–4. ISBN 0-8265-1528-2, ISBN 978-0-8265-1528-5.
13. Kunstler, James Howard (2005). *The Long Emergency* (https://books.google.com/books?id=GV_IT_IQPYMC&pg=PA6). Grove Press. p. 6. ISBN 978-0-8021-4249-8.
14. Serge Luryi (May 2006). "Physics, Philosophy, and ... Ecology" (https://web.archive.org/web/20110721020813/http://life.bio.sunysb.edu/ee/ginzburglab/Physics_Today.pdf) (PDF). *Physics Today*. **59** (5): 51. doi:10.1063/1.2216962 (https://doi.org/10.1063%2F1.2216962). Archived from the original (http://life.bio.sunysb.edu/ee/ginzburglab/Physics_Today.pdf) (PDF) on July 21, 2011.
15. Frank W. Elwell (2001). "Reclaiming Malthus, Keynote address to the Annual Meeting of the Anthropologists and Sociologist of Kentucky" (http://www.faculty.rsu.edu/users/f/felwell/www/Theorists/Malthus/reclaim.htm). Retrieved 2011-04-19.
16. Bjørn Lomborg (2002). *The Skeptical Environmentalist: Measuring the Real State of the World* (https://archive.org/details/skepticalenviron00lomb_0). Cambridge University Press. p. 30 (https://archive.org/details/skepticalenviron00lomb_0/page/30). ISBN 978-0-521-01068-9.
17. Colin Fraser (February 3, 2008). "Green revolution could still blow up in our face" (http://www.theage.com.au/articles/2008/02/02/1201801097280.html). *The Age*.
18. Cristina Luiggi (2010). "Still Ticking" (https://web.archive.org/web/20110101172056/http://www.the-scientist.com/2010/12/1/26/1/). *The Scientist*. **24** (12): 26. Archived from the original (http://www.the-scientist.com/2010/12/1/26/1/) on January 1, 2011.
19. Malthus, *Essay on the Principle of Population*, Ch. VII.
20. Oxford World's Classics reprint
21. Engels, Fredrick (1892). *The Condition of the Working-Class in England in 1844* (http://www.fordham.edu/halsall/mod/1844engels.html). London: Swan Sonnenschein & Co. Engels wrote that poverty and poor living conditions in 1844 had largely disappeared.
22. Fogel, Robert W. (2004). *The Escape from Hunger and Premature Death, 1700–2100*. London: Cambridge University Press. ISBN 978-0521808781.
23. Neurath, Paul (1994). *From Malthus to the Club of Rome and Back* (https://books.google.com/books?id=_ZHx3GO_xLMC&lpg=PA54). M.E. Sharpe. p. 5. ISBN 9781563244070.
24. Adrian Desmond (1992). *The Politics of Evolution: Morphology, Medicine, and Reform in Radical London* (https://books.google.com/books?id=z7LeJ4i0-vAC&pg=PA126). University of Chicago Press. p. 126. ISBN 978-0-226-14374-3.

25. UMBC. (http://www.umbc.edu/history/CHE/InstPg/RitDop/Discovery-of-poverty-Malthusianism.htm) Archived (https://web.archive.org/web/20070621105033/http://www.umbc.edu/history/CHE/InstPg/RitDop/Discovery-of-poverty-Malthusianism.htm) June 21, 2007, at the Wayback Machine
26. David Ricardo, *The Works and Correspondence of David Ricardo* (http://oll.libertyfund.org/title/159), ed. Piero Sraffa with the Collaboration of M. H. Dobb (Indianapolis: Liberty Fund, 2005), 11 vols.
27. Charles Darwin: gentleman naturalist (http://darwin-online.org.uk/darwin.html) A biographical sketch by John van Wyhe, 2006
28. Ashraf, Quamrul; Galor, Oded (2011). "Dynamics and Stagnation in the Malthusian Epoch" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4262154). *American Economic Review*. **101** (5): 2003–2041. doi:10.1257/aer.101.5.2003 (https://doi.org/10.1257%2Faer.101.5.2003). PMC 4262154 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4262154). PMID 25506082 (https://pubmed.ncbi.nlm.nih.gov/25506082).
29. Malthus, Thomas Robert (1798). "An Essay on The Principle of Population" (http://www.esp.org/books/malthus/population/malthus.pdf) (PDF). *Electronic Scholarly Publishing Project*. Retrieved 29 March 2018.
30. Simkins, Charles (2001). "Can South Africa Avoid a Malthusian Positive Check?". *Daedalus*. **130** (1): 123–150. JSTOR 20027682 (https://www.jstor.org/stable/20027682). PMID 19068951 (https://pubmed.ncbi.nlm.nih.gov/19068951).
31. Garcia, Cardiff. "When Keynes pondered Malthus" (http://ftalphaville.ft.com/2017/07/26/2191314/the-lessons-of-keynes-pondering-malthus/). *Financial Times*. Retrieved 2019-08-10.
32. V. I. Lenin, "The Working Class and Neo-Malthusianism" (https://www.marxists.org/archive/lenin/works/1913/jun/29.htm), 1913.
33. See, e.g., Peter Turchin 2003; Turchin and Korotayev 2006 (http://cliodynamics.info/PDF/Turchin_Korotayev_SEH_2006.pdf) Archived (https://web.archive.org/web/20120229202712/http://cliodynamics.info/PDF/Turchin_Korotayev_SEH_2006.pdf) February 29, 2012, at the Wayback Machine; Peter Turchin et al. 2007; Korotayev et al. 2006.
34. Hardin, Garrett (1968). "The Tragedy of the Commons" (https://doi.org/10.1126%2Fscience.162.3859.1243). *Science*. **162** (3859): 1243–1248. Bibcode:1968Sci...162.1243H (https://ui.adsabs.harvard.edu/abs/1968Sci...162.1243H). doi:10.1126/science.162.3859.1243 (https://doi.org/10.1126%2Fscience.162.3859.1243). PMID 17756331 (https://pubmed.ncbi.nlm.nih.gov/17756331).
35. Wouter van Dieren, ed. (1995). *Taking Nature Into Account: A Report to the Club of Rome* (https://books.google.com/books?id=UOcUZ9uquhEC&pg=PA2). Springer Books. ISBN 978-0-387-94533-0.
36. Daly, Herman E. (1991). *Steady-state economics* (2nd ed.). Washington, D.C.: Island Press. ISBN 978-1559630726.
37. Dan Gardner (2010). *Future Babble: Why Expert Predictions Fail – and Why We Believe Them Anyway* (https://archive.org/details/futurebabblewhye0000gard). Toronto: McClelland and Stewart.
38. Bartlett, Al (September 1996). "The New Flat Earth Society" (http://www.albartlett.org/articles/art1998jan.html). *The Physics Teacher*. **34** (6): 342–43. doi:10.1119/1.2344473 (https://doi.org/10.1119%2F1.2344473). Retrieved 9 April 2013.
39. Paul R. Ehrlich; Anne H. Ehrlich (2009). "The Population Bomb Revisited" (http://www.populationmedia.org/wp-content/uploads/2009/07/Population-Bomb-Revisited-Paul-Ehrlich-20096.pdf) (PDF). *Electronic Journal of Sustainable Development*. **1** (3): 63–71. Retrieved 2010-02-01.

40. Brown, Lester (May–June 2011). "The New Geopolitics of Food" (https://web.archive.org/web/20111127062517/http://www.foreignpolicy.com/articles/2011/04/25/the_new_geopolitics_of_food?page=0%2C0&sms_ss=twitter&at_xt=4dd4e5e0cd2157fa%2C0). *Foreign Policy*. Archived from the original (https://foreignpolicy.com/articles/2011/04/25/the_new_geopolitics_of_food?page=0,0&sms_ss=twitter&at_xt=4dd4e5e0cd2157fa,0) on 27 November 2011. Retrieved 7 June 2011.
41. Schneider-Mayerson, Matthew, author. (2015-10-14). *Peak oil : apocalyptic environmentalism and libertarian political culture*. ISBN 9780226285573. OCLC 951562545 (https://www.worldcat.org/oclc/951562545).
42. How to feed the world in 2050 (http://www.fao.org/wsfs/forum2050/wsfs-background-documents/issues-briefs/en/)
43. 2050: A third more mouths to feed (http://www.fao.org/news/story/en/item/35571/icode/)
44. Climate Change and Land report (https://www.ipcc.ch/report/srccl/)
45. Climate Change Threatens the World's Food Supply, United Nations Warns (https://www.nytimes.com/2019/08/08/climate/climate-change-food-supply.html)
46. "FAO says Food Production must Rise by 70%" (https://web.archive.org/web/20190621135409/https://www.populationinstitute.org/resources/populationonline/issue/1/8/). *Population Institute*. Archived from the original (https://www.populationinstitute.org/resources/populationonline/issue/1/8/) on 21 June 2019. Retrieved 7 February 2021.
47. Fischer, R. A.; Byerlee, Eric; Edmeades, E. O. "Can Technology Deliver on the Yield Challenge to 2050" (ftp://ftp.fao.org/docrep/fao/012/ak977e/ak977e00.pdf) (PDF). *Expert Meeting on How to Feed the World*. Food and Agriculture Organization of the United Nations: 12.
48. Ashraf, Quamrul; Galor, Oded (2011). "Dynamics and Stagnation in the Malthusian Epoch" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4262154). *American Economic Review*. **101** (5): 2003–41. doi:10.1257/aer.101.5.2003 (https://doi.org/10.1257%2Faer.101.5.2003). PMC 4262154 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4262154). PMID 25506082 (https://pubmed.ncbi.nlm.nih.gov/25506082).
49. Allen, R. C. (2001). "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War". *Explorations in Economic History*. **38** (4): 411–47. doi:10.1006/exeh.2001.0775 (https://doi.org/10.1006%2Fexeh.2001.0775).
50. Overton, Mark (1996). *Agricultural Revolution in England: The transformation of the agrarian economy 1500–1850* (https://archive.org/details/isbn_9780521568593). Cambridge University Press. ISBN 978-0-521-56859-3.
51. Scheidel, Walter (2017). *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century* (http://press.princeton.edu/titles/10921.html). Princeton University Press. pp. 292–93, 304. ISBN 978-0691165028.
52. Fogel, Robert W. (2004). *The Escape from Hunger and Premature Death, 1700–2100*. London: Cambridge University Press. ISBN 978-0-521-80878-1.
53. Korotayev, Andrey; Zinkina, Julia (2015). "EAST AFRICA IN THE MALTHUSIAN TRAP? A statistical analysis of financial, economic, and demographic indicators". arXiv:1503.08441 (https://arxiv.org/abs/1503.08441) [q-fin.GN (https://arxiv.org/archive/q-fin.GN)]. Unknown parameter `|url-status=` ignored (help); Unknown parameter `|url=` ignored (help)
54. Diamond, Jared (2005). *Collapse*. New York: Viking. pp. 311–328. ISBN 9780670033379.
55. Tepper, Alexander and Karol J. Borowiecki. Accounting for Breakout in Britain: The Industrial Revolution through a Malthusian Lens (2013). Federal Reserve Bank of New York Staff Report 639. Available at: https://ideas.repec.org/p/fip/fednsr/639.html
56. Voth, Hans-Joachim (2008). "Clark's intellectual Sudoku". *European Review of Economic History*. **12** (2): 149–155. doi:10.1017/S1361491608002190 (https://doi.org/10.1017%2FS1361491608002190).
57. https://www.census.gov/ipc/www/worldhis.html
58. Data source: http://faostat3.fao.org/download/Q/QI/E, see graph metadata for further details.

59. Hopkins, Simon (1966). *A Systematic Foray into the Future*. Barker Books. pp. 513–69.
60. "2004 UN Population Projections, 2004" (https://www.un.org/esa/population/publications/longrange2/WorldPop2300final.pdf) (PDF).
61. Arrow, K., P. Dasgupta, L. Goulder, G. Daily, P. Ehrlich, G. Heal, S. Levin, K. Mäler, S. Schneider, D. Starrett and B. Walker, "Are We Consuming Too Much" *Journal of Economic Perspectives*, 18(3), 147–72, 2004.
62. Engels, Friedrich."Outlines of a Critique of Political Economy", *Deutsch-Französische Jahrbücher*, 1844, p. 1.
63. Karl Marx (transl. Ben Fowkes), *Capital Volume 1*, Harmondsworth, Penguin, 1976 (originally 1867), pp. 782–802.
64. "Progress and Poverty, Chapter 7" (http://www.henrygeorge.org/pchp7.htm). *www.henrygeorge.org*. Retrieved 2020-05-17.
65. Charles., Eversley, David Edward (1959). *Social theories of fertility and the Malthusian debate*. Westport, Connecticut: Greenwood Press. ISBN 9780837176284. OCLC 1287575 (https://www.worldcat.org/oclc/1287575).
66. Boserup, Ester (1966). "The Conditions of Agricultural Growth. The Economics of Agrarian Change under Population Pressure". *Population*. **21** (2): 402. doi:10.2307/1528968 (https://doi.org/10.2307%2F1528968). JSTOR 1528968 (https://www.jstor.org/stable/1528968).
67. Brand, Stewart (2010). *Whole Earth Discipline*. ISBN 978-1843548164.
68. Simon, Julian L, "More People, Greater Wealth, More Resources, Healthier Environment (http://www.juliansimon.org/writings/Articles/REVOLUTI.txt)", *Economic Affairs: J. Inst. Econ. Affairs*, April 1994.
69. Tainter, Joseph. *The Collapse of Complex Societies*, Cambridge University Press, Cambridge, UK, 2003.
70. Galor, Oded (2011). *Unified Growth Theory*. Princeton: Princeton University Press.
71. Galor, Oded; Moav, Omer (2002). "Natural Selection and The Origin of Economic Growth". *Quarterly Journal of Economics*. **117** (4): 1133–91. CiteSeerX 10.1.1.199.2634 (https://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.199.2634). doi:10.1162/003355302320935007 (https://doi.org/10.1162%2F003355302320935007).

References

- Korotayev, A., Malkov A., Khaltourina D. *Introduction to Social Macrodynamics: Compact Macromodels of the World System Growth. (https://www.academia.edu/32757085/Introduction_to_Social_Macrodynamics._Models_of_the_World_System_Development._Moscow_KomKniga_URSS_2006)* Moscow: URSS, 2006. ISBN 5-484-00414-4
- Korotayev A., Malkov A., Khaltourina D. *Introduction to Social Macrodynamics: Secular Cycles and Millennial Trends. (https://www.academia.edu/22215616/Introduction_to_Social_Macrodynamics_Secular_Cycles_and_Millennial_Trends)* Moscow: URSS, 2006. ISBN 5-484-00559-0 See especially Chapter 2 of this book
- Korotayev A. & Khaltourina D. *Introduction to Social Macrodynamics: Secular Cycles and Millennial Trends in Africa. (https://www.academia.edu/27503953/Introduction_to_Social_Macrodynamics_Secular_Cycles_and_Millennial_Trends_in_Africa)* Moscow: URSS, 2006. ISBN 5-484-00560-4
- Malthus, Thomas Robert (1798). "An Essay on the Principle of Population" (http://www.esp.org/books/malthus/population/malthus.pdf) (PDF). *Electronic Scholarly Publishing Project* (First ed.). London. Retrieved 29 March 2018.
- Turchin, P., et al., eds. (2007). History & Mathematics: Historical Dynamics and Development of Complex Societies. (http://edurss.ru/cgi-bin/db.pl?cp=&page=Book&id=53185&lang=en&blang=en&list=Found) Moscow: KomKniga. ISBN 5-484-01002-0

- A Trap At The Escape From The Trap? Demographic-Structural Factors of Political Instability in Modern Africa and West Asia. *Cliodynamics* 2/2 (2011): 1–28 (https://www.academia.edu/1546 3657/A_Trap_At_The_Escape_From_The_Trap_Demographic_Structural_Factors_of_Politica l_Instability_in_Modern_Africa_and_West_Asia).
- Lueger, T. (2019). *The Principle of Population and the Malthusian Trap*. Darmstadt Discussion Papers in Economics 232, 2018. https://papers.ssrn.com/sol3/papers.cfm? abstract_id=3492297
- Turchin, P.; Korotayev (2006). "Population Dynamics and Internal Warfare: A Reconsideration" (https://www.academia.edu/41550406). *Social Evolution & History*. **5** (2): 112–47.
- Malthus, Thomas Robert (1826). *An Essay on the Principle of Population: A View of its Past and Present Effects on Human Happiness; with an Inquiry into Our Prospects Respecting the Future Removal or Mitigation of the Evils which It Occasions* (Sixth ed.). London: John Murray.
- Pomeranz, Kenneth (2000). *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. ISBN 978-0-691-09010-8.
- Rosen, William (2010). *The Most Powerful Idea in the World*. New York: Random House. ISBN 978-1-4000-6705-3.
- A Trap At The Escape From The Trap? Demographic-Structural Factors of Political Instability in Modern Africa and West Asia. *Cliodynamics* 2/2 (2011): 1–28 (https://escholarship.org/uc/item/ 79t737gt).

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- David Friedman's essay arguing against Malthus' conclusions (http://www.daviddfriedman.com/ Academic/Laissez-Faire_In_Popn/L_F_in_Population.html)
- United Nations Population Division World Population Trends homepage (https://www.un.org/po pin/wdtrends.htm)

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